AASHTO T 166 - BULK SPECIFIC GRAVITY OF COMPACTED ASPHALT MIXTURES USING SATURATED SURFACE-DRY SPECIMENS

Conduct this procedure according to AASHTO T 166, NDDOT Modified.

The standard test procedure specifies for cores to be immersed for 4±1 minutes. The NDDOT modification is to immerse cores for 3 to 3½ minutes.

Consult the current edition of AASHTO for procedure in its entirety and equipment specification details.

The following describes "Method A".

SCOPE

This test procedure determines the bulk specific gravity of specimens of compacted asphalt mixtures.

REFERENCED DOCUMENTS

AASHTO T 275, Bulk Specific Gravity of Compacted Bituminous Mixtures Using Paraffin-Coated Specimens

APPARATUS

Balance, readable to 0.1% of the sample weight
Suspension apparatus
Water bath
Damp towel

TEST SPECIMEN

Test specimens may be either laboratory molded or cores taken from HMA pavements. They shall be free from foreign material such as seal coat, tack coat, or foundation material. Layers may be separated by sawing or other suitable means with care taken not to damage the specimen. Laboratory molded specimens may be cooled by a fan.

PROCEDURE

Record all weights to the nearest 0.1 g.

Dry the specimens to constant weight. Constant weight is defined as when further drying does not change the weight by more than 0.05%. Samples saturated with water shall be initially dried overnight at 125±5°F (52±3°C) then weighed at two-hour

intervals. Recently molded laboratory specimens which have not been exposed to moisture do not require drying.

Cool the specimens to 77±9°F (25±5°C) and weigh each specimen. Record this mass as specimen in air.

Immerse each specimen in water at 77±1.8°F (25±1°C) suspended beneath a balance for a period of 3 to 3½ minutes. Record this mass as specimen in water.

Remove the specimen from the water and surface dry by blotting with a damp towel. Weigh the mass as quickly as possible and record as surface-dry specimen in air.

CALCULATIONS

To calculate the bulk specific gravity, use the following formula:

Bulk Specific Gravity (G_{mb}) = [A/(B - C)]

A = Weight in grams of the specimen in air
B = Weight in grams, surface dry
C = Weight in grams, in water

Report the bulk specific gravity to the nearest 0.001.

The bulk specific gravity may be used to calculate the unit weight of the specimens by multiplying by 62.4. The results are in lbs/cu.ft.

Calculate the percent of water absorbed by the specimen (on a volume basis) as follows:

Percent of water absorbed by volume = [(B - A)/(B - C)] x 100

If the percent of water absorbed by the specimen exceeds 2%, use AASHTO T 275 to determine the bulk specific gravity.

NOTES

Terry cloth has been found to work well for an absorbent cloth. Damp is considered to be when no water can be wrung from the towel.

CALIBRATION

A calibration check of the equipment should be performed annually as a minimum, or whenever damage or repair occurs.